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NOTES ON THE WINTER ROOST AND DIET OF LONG-EARED OWLS IN THE SONORAN DESERT

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KEY WORDS: *Arizona; Asio otus; diet; long-eared owl; Sonoran Desert.*

The winter diet of long-eared owls (*Asio otus*) in North America has been well-documented (see Marti 1976, Cramp 1985 for reviews). However, there are few records of the diet of this species in the arid Southwest (Stophlet 1959, Marti et al. 1986, Barrows 1989). Although localized populations of long-eared owls inhabit the Sonoran Desert in Arizona (Phillips et al. 1964), only one report of the diet of long-eared owls exists from the Sonoran Desert in southwestern California (Barrows 1989). In this paper, I describe the roost and diet of wintering long-eared owls in the Sonoran Desert in Arizona.

STUDY AREA AND METHODS

The winter roost was located in a cluster of ironwood trees (*Olneya tesota*) in a wash 1.2 km north of Deadman Gap, on the eastern edge of the Crater Mountain Range. The vegetation on the valley floor around Deadman Gap is dominated by creosote (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), and lacks larger tree-like veg-

etation or cacti. However, thickets of ironwood, palo verde (*Cercidium* sp.), and mesquite (*Prosopis* sp.) can be found in the washes that traverse the area. The rocky slopes of the Crater Range contain creosote and bursage scattered among a sparse mixture of palo verde, ironwood, and saguaro (*Cereus giganteus*).

Pellets were collected from beneath the roost from 4 March to 30 March 1994, when long-eared owls were observed in the area. Most of the pellets were soaked in a weak NaOH solution and sieved through a wire screen (Marti 1987). The remaining pellets were analyzed by dry dissection. The mammalian skulls and dentaries were identified with the use of keys (Hoffmeister 1986, Jones and Manning 1992), and the number of each species was determined by the number of skulls with the exception of the bird and scorpion remains.

RESULTS

Roost Description. Approximately a dozen owls were seen roosting on the lower branches of the ironwood trees which were situated on the bank of a 25-m-wide dry wash. The morphology of the ironwood trees was such that the foliage was more dense and widespread near the base than

Table 1. Prey species identified from long-eared owl pellets collected in the Sonoran Desert, Arizona.

SPECIES	NUMBER OF INDIVIDUALS	PERCENT
<i>Dipodomys merriami</i>	178	75
<i>Dipodomys</i> sp.	19	8
<i>Perognathus</i> and <i>Chaetodipus</i> sp.	37	15
<i>Peromyscus maniculatus</i>	1	^a
<i>Neotoma albigula</i>	1	^a
Unidentified passerine	1	^a
Scorpionida	1	^a
Total prey	238	100%

^a <1% of total prey.

near the top. The trees were bordered by the sandy wash to the east and creosote and bursage to the west; to the north and south along the edge of the wash the vegetation consisted of ironwood and palo verde trees. Within the area the availability of clusters of ironwood trees with similar morphology and density was limited.

Throughout the month of March, long-eared owls (up to 10) were seen near the ridge of the Crater Mountains just west of the wash. The owls were observed flying around during the day in response to military aircraft flying over this ridge. The rough topography of the mountain range did not allow for the investigation of this apparent alternative roost.

Diet. Kangaroo rats (*Dipodomys* spp.) made up approximately 83% of the owls' diet and pocket mice (*Perognathus* and *Chaetodipus* spp.), 15% (Table 1). These results support Marti's findings (1976) that the diet of the long-eared owl is typically concentrated on relatively few species of small mammals, regardless of location or habitat. Barrows (1989) also found kangaroo rats and pocket mice to be the most common prey species of long-eared owls in the deserts of southern California. Although small mammal trapping has not been conducted in the immediate area of this owl roost, trapping was conducted in a very similar (i.e., elevation, topography, vegetation) creosote-dominated area 24 km north of Deadman Gap. The most commonly trapped species were the Merriam's kangaroo rat (*Dipodomys merriami*) and three species of pocket mice (*Perognathus amplus*, *Chaetodipus intermedius*, and *C. penicillatus*; R. Barry, Luke AFB pers. comm.). These species are also thought to inhabit the Deadman Gap area, as well as Bailey's pocket mouse (*Chaetodipus baileyi*) and the desert kangaroo rat (*Dipodomys deserti*; Hoffmeister 1986). On several occasions I noted the owls leaving the roost after dusk and flying eastward out over the vast creosote-dominated area.

DISCUSSION

It has been suggested that long-eared owls feed selectively on microtine rodents (Marti 1976). However, Marks (1984) noted that in desert environments where microtines are less abundant, long-eared owls are relatively oppor-

tunistic feeders. In Idaho the diet of the owls was dominated by heteromyids and deer mice (*Peromyscus* spp.) which were more widely distributed on the area than microtines. In contrast, Kotler (1985) concluded that in the cool desert environment of Nevada, long-eared owls avoided kangaroo rats, the most abundant rodent, and switched to them as prey only when their preferred prey (*Peromyscus*) became extinct in the area. Maser et al. (1970) found long-eared owls in Oregon selected pocket mice in areas where deer mice were the most common small mammal. In Idaho, Thurow and White (1984) similarly found that long-eared owls preyed more on kangaroo rats than the more abundant western harvest mouse (*Reithrodontomys megalotis*), but they could not conclude if this selection was based on opportunity or energy yield.

Other records of the diet of long-eared owls show that wood rats (*Neotoma* spp.), various small birds, and several kinds of insects are known to be prey of these owls (Stophlet 1959, Maser et al. 1970, Marks 1984, Thurow and White 1984, Craig et al. 1985, Marti et al. 1986, Bull et al. 1989). However, no other record could be found of long-eared owl predation on scorpions. This may be in part due to the lack of extensive records of long-eared owls in the warm desert environments of southwestern United States. In northwestern New Mexico, Marti et al. (1986) found the diet of wintering long-eared owls was dominated by heteromyids (*Dipodomys*, *Perognathus*, and *Chaetodipus*) in an area where trapping indicated that deer mice were the most numerous and widespread small mammals. Stophlet (1959) noted that pocket mice were the most abundant prey found in long-eared owl pellets from the oak woodlands in Arizona.

My results add to the increasing evidence that in arid environments of North America heteromyids are the dominant prey of long-eared owls (Stophlet 1959, Maser et al. 1970, Marks, 1984, Craig et al. 1985, Marti et al. 1986). Although the owls may prefer mammalian prey, overall they are generally opportunistic.

RESUMEN.—En marzo de 1994, descubrí un sitio de descanso invernal con aproximadamente 12 individuos de la especie *Asio otus*, en una zona de escurrimiento en el Barry M. Goldwater Gunnery Range, Condado de Maricopa, Arizona. El sitio estaba localizado en un racimo de arboles de la especie *Olneya testota* en el borde del interfluvio. Durante el mes de marzo, se colectaron aproximadamente 200 egagrópilas bajo el sitio. El análisis de las egagrópilas encontradas indicó que la presa más común era *Dipodomys* (83%) y *Perognathus* y *Chaetodipus* (15%). Otras categorías de presas incluyeron a *Neotoma*, *Peromyscus*, un ave y un escorpión. Este es el primer reporte de depredación de escorpiones por *A. otus*.

[Traducción de Ivan Lazo]

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OSPREY POLYGYNY IN WYOMING

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KEY WORDS: *osprey*; *Pandion haliaetus*; *polygyny*; *range expansion*.

Polygyny, a mating system in which a male mates with two or more females (Oring 1982), has been reported for ospreys (*Pandion haliaetus*) on several occasions (Fernandez and Fernandez 1977, Cramp and Simmons 1980, Poole 1989), and at least 10 other raptor species (Newton 1979). The generally low rate of polygyny in osprey may be related to male participation in incubation, whereas the rate is higher in species where only females incubate. Here we report polygynous osprey nesting near Sheridan, Wyoming, and the history of nesting activity that preceded

intensive observations in 1994. Observations took place on lands of the Big Horn Mine in Sheridan County, Wyoming from 1989-94. The Tongue River and Big Goose Creek flow through the mining area and several reservoirs are present which support fish populations.

During the late summer of 1989, nest building (sticks present on power poles) occurred on mine property, but no birds were seen carrying sticks. Ospreys were not suspected at that time because there was no record of ospreys nesting in the vicinity. In retrospect, we are confident that ospreys carried the sticks to the power poles in 1989. In 1990 and 1991, a pair of ospreys nested in the area and fledged three young each year; in spring of 1992 a trio